Component Backpump C-51, Hillsboro, C-14, C-13 and North New River Canals

Geographic Region: Water Preserve Area - Palm Beach, Broward & Miami-Dade Counties

Component Title: Backpump C-51, Hillsboro, C-14, C-13 and North New River Canals - SEE ALTERNATIVE D13R Scenario 1 COMPONENT MAPS 1, 2 & 3

Purpose: Increase water supply for North East Shark River Slough and Biscayne Bay by capturing and rerouting water currently discharged to tide.

The facility will provide flood peak attenuation within the basins, reduce freshwater discharges to tide and increase flows to North East Shark River Slough, Water Conservation Area 2A and Biscayne Bay while recharging Miami-Dade County's coastal canals.

Operation: Excess runoff from the C-51 Canal will be backpumped into improved Lake Worth Drainage District=s (LWDD) E-2E and E-2W canals which will provide conveyance south to the C-16 Canal. The runoff will then be routed west to the LWDD E-1 canal and pumped into the Palm Beach County Agricultural Reserve Reservoir. From the Agricultural Reserve Reservoir, runoff will be discharged south into the LWDD E-1W canal and routed into the Site 1 Impoundment (Component M).

Component M will be revised to accept additional runoff from the C-51 and Hillsboro Canals by increasing the inflow pump capacity and modifying the function of the storage area into a stormwater treatment area. Runoff will be pumped into a 300-acre deep impoundment area which will overflow into the surrounding 2160-acre, stormwater treatment area. The 30-5 MGD ASR wells will pull water from the deep impoundment area. Discharge from the stormwater treatment area will be into Water Conservation Area 2A.

Runoff from the C-14, C-13, North New River Canals and Water Conservation Area 2B levee seepage will be backpumped to the US 27 west borrow canal via C-42 and North New River Canals. This runoff will be directed south to the North Lake Belt Storage Area (NLBSA) if storage is available in that facility. Discharges from the NLBSA are described in Component XX. If storage is not available in NLBSA, the backpumped water will be routed either to the Bird Drive Recharge Area or Biscayne Bay via the US 27 west borrow canal, the NLBSA conveyance system improvements, and the C-1, C-2, C-4 and C-6 Canals. Deliveries will not be made during storm peaks so as to not impact flood protection. If storage is not available in NLBSA and conveyance capacities are not available without impact tot flood protection, backpumping will not occur.

Design:

C-51:
(see Alternative D13R Scenario 1, component map 1)

1) Increase the capacity of the existing LWDD's Control Structure #4 pump to 1000 cfs to capture +/- 100 kac-ft/yr from the C-51 Canal.
2) Improve the conveyance of LWDD's E-2E and E-2W canals, from C-51 Canal south to the C-16 Canal, 500 cfs above existing design flood capacity. Install intermediate 500 cfs capacity pumps, one on each canal (E-2E & E-2W), to lift backpumped deliveries from 13.0 feet NGVD to 16 feet NGVD.
3) Increase the capacity of the northern pump station on the LWDD's E-1 canal from 500 cfs to 1500 cfs, proposed as part of the Palm Beach County Agricultural Reserve Reservoir (Component VV). Improve conveyance in the western portion of the C-16 Canal from LWDD's E-2E canal west to the E-1 canal and the E-1 canal south to the proposed Reservoir as necessary to pass an additional 1000 cfs from C-51.
4) Revise the function and increase the capacity of the emergency overflow structure to be located at the southwest corner of the PBC Agricultural Reserve Reservoir to pass the 1000 cfs from C-51 and direct it south into LWDD's E-1W canal.
5) Improve the capacity of the LWDD's E-1W canal to pass the 1000 cfs from the PBC Agricultural Reserve Reservoir south to the Hillsboro Canal or use the Loxahatchee Mitigation Bank wetland system for conveyance if necessary.

Hillsboro:
(see Alternative D13R Scenario 1, component map 1)

1) Increase the inflow pump station located on the Hillsboro Canal for Site 1 (Component M) from 700 cfs to 2000 cfs to include the 1000 cfs from C-51 and an additional 300 cfs from the Hillsboro Canals.
2) Revise the design of the Site 1 facility to include a 300-acre central impoundment, 12 feet deep with the remaining 2160 acres to function as a stormwater treatment area.
3) The deep impoundment will overflow into the stormwater treatment area via a gravity control structure (sized from 500 cfs to 1500 cfs based on water quality criteria yet to be determined and stormwater treatment area's treatment capacity). The stormwater treatment area will discharge into Water Conservation Area 2A via a gravity control structure sized from 500 cfs to 1500 cfs.

C-14, C-13, North New River and WCA 2B seepage:
(see Alternative D13R Scenario 1, component map 2)

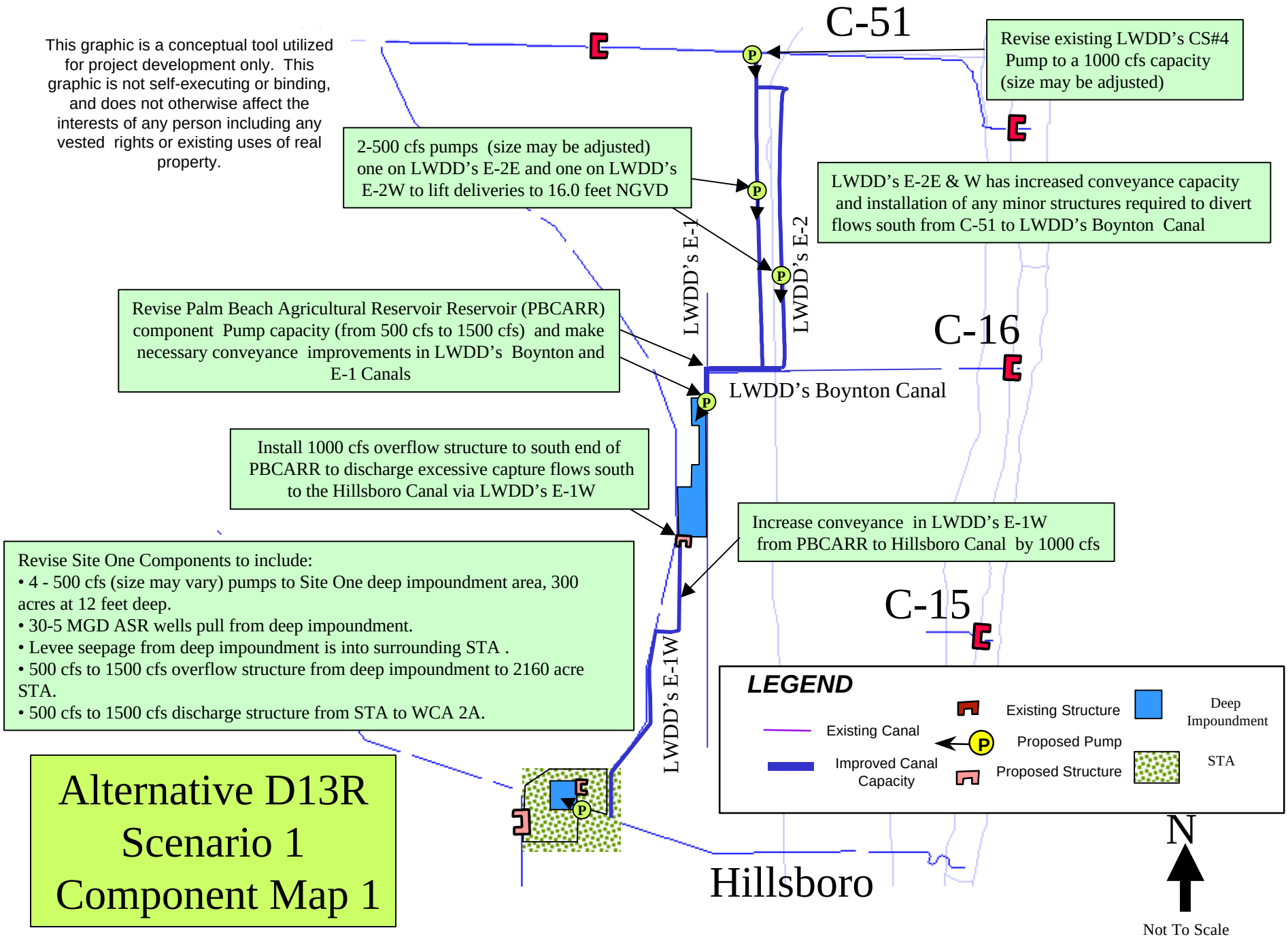
1) Install a 500 cfs pump at the intersection of C-14 Canal and C-42 Canal to

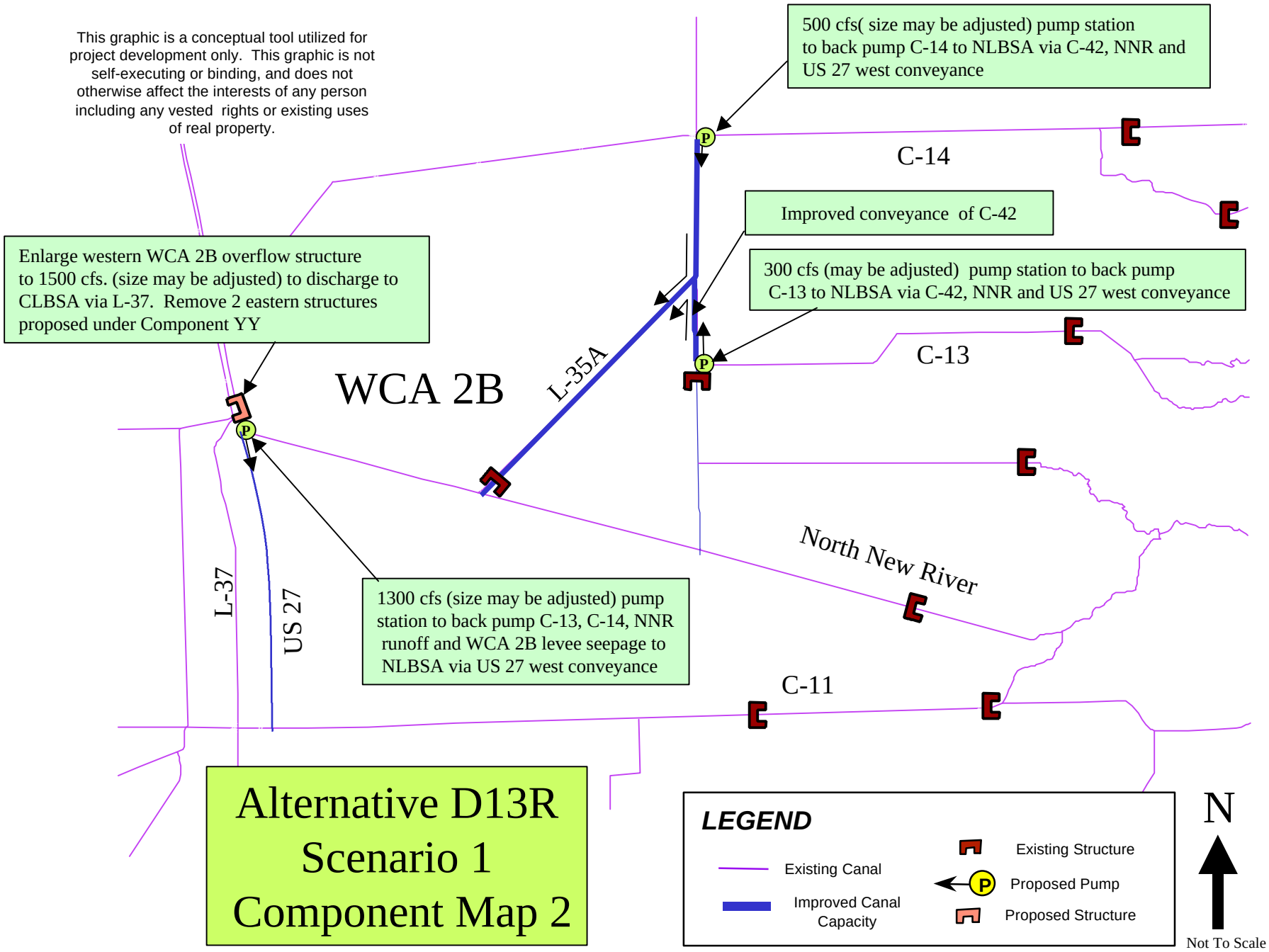
send C-14 flows south to the North New River or the L-35A borrow canal.
2) Install a 300 cfs pump at the intersection of C-13 Canal and C-42 Canal to send C-13 flows north to the North New River Canal via the L-35A borrow canal.
3) Increase the capacity of the western WCA 2B overflow structure to 1500 cfs and remove the 2 eastern structures proposed as part of Component YY.
4) Install a 1300 cfs pump station to back pump runoff from C-13, C-14 and North New River Canals and seepage from WCA 2B to the North Lake Belt Storage Area via the US 27 west borrow canal.

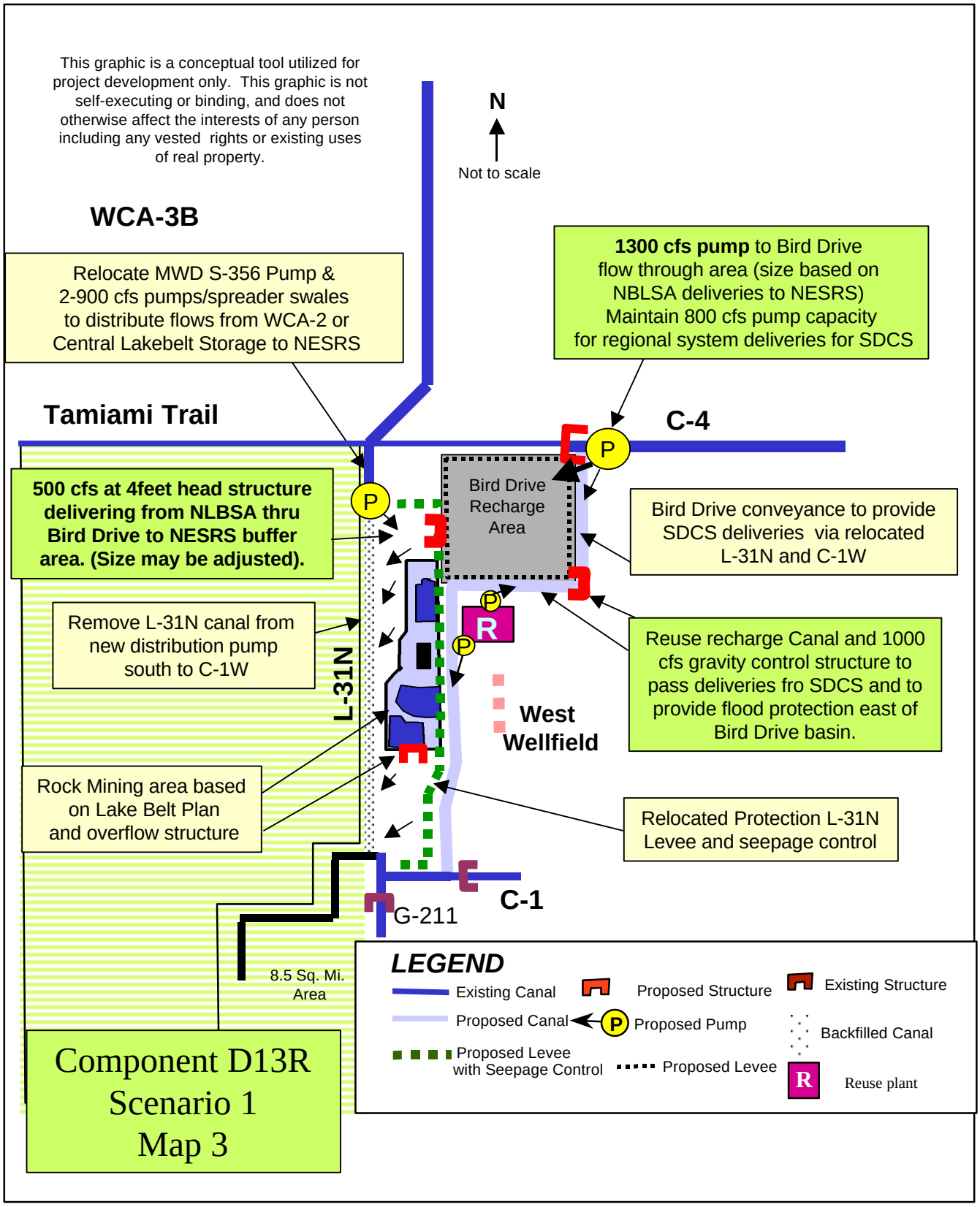
Deliveries to Bird Drive Recharge Area or Biscayne Bay:
(See Alternative D13R Scenario 1, component map 3)
1) Improve the capacity of the NLBSA conveyance system along Snapper Creek to handle flows of 1500 cfs (Component XX).
2) Increase the capacity of the inflow pump located at the northeast corner of the Bird Drive Recharge Area from 200 cfs to 1300 cfs to allow pass through of flows to North East Shark River Slough.
3) Add a gravity control structure with a capacity of 500 cfs at 4 feet of head to provide discharges to the buffer area west of the relocated L-31N Levee and North East Shark River Slough.
4) Distribution of flows to Biscayne Bay will be accomplished through existing, proposed or improved conveyance described in other components (S, XX, U, FF). The C-1 Canal conveyance capacity may need to be increased to provide deliveries to Biscayne Bay.

Location: Water Preserve Areas
Counties: Palm Beach, Broward, Miami-Dade

Assumptions and related considerations:
1) Water quality of deliveries to North East Shark River Slough are of acceptable quality for restoration.
2) Flood protection in all affected areas **will** be maintained. Backpumping will not occur if the conveyance systems can not adequately pass flows to storage and/or treatment areas. Backpumping flows to tide from the C-51 Canal and through 3 LWDD's canals shall be controlled by SFWMD's Operations Department and coordination with LWDD's staff.


This graphic is a conceptual tool utilized for project development only. This graphic is not self-executing or binding, and does not otherwise affect the interests of any person including any vested rights or existing uses of real property.
C-51
Revise existing LWDD's CS#4 Pump to a 1000 cfs capacity (size may be adjusted)
2-500 cfs pumps (size may be adjusted) one on LWDD's E-2E and one on LWDD's E-2W to lift deliveries to 16.0 feet NGVD
LWDD's E-2E & W has increased conveyance capacity and installation of any minor structures required to divert flows south from C-51 to LWDD's Boynton Canal
LWDD's E-1
LWDD's E-2
Revise Palm Beach Agricultural Reservoir Reservoir (PBCARR) component Pump capacity (from 500 cfs to 1500 cfs) and make necessary conveyance improvements in LWDD's Boynton and E-1 Canals
C-16
LWDD's Boynton Canal
Install 1000 cfs overflow structure to south end of PBCARR to discharge excessive capture flows south to the Hillsboro Canal via LWDD's E-1W
Increase conveyance in LWDD's E-1W from PBCARR to Hillsboro Canal by 1000 cfs
Revise Site One Components to include:
• 4 - 500 cfs (size may vary) pumps to Site One deep impoundment area, 300 acres at 12 feet deep.
• 30-5 MGD ASR wells pull from deep impoundment.
• Levee seepage from deep impoundment is into surrounding STA .
• 500 cfs to 1500 cfs overflow structure from deep impoundment to 2160 acre STA.
• 500 cfs to 1500 cfs discharge structure from STA to WCA 2A.
C-15
LWDD's E-1W
LEGEND
Existing Canal
Improved Canal Capacity
Existing Structure
Proposed Pump
Proposed Structure
Deep Impoundment
STA
Alternative D13R Scenario 1 Component Map 1
Hillsboro
N
Not To Scale


This graphic is a conceptual tool utilized for project development only. This graphic is not self-executing or binding, and does not otherwise affect the interests of any person including any vested rights or existing uses of real property.
500 cfs(size may be adjusted) pump station to back pump C-14 to NLBSA via C-42, NNR and US 27 west conveyance
C-14
Improved conveyance of C-42
Enlarge western WCA 2B overflow structure to 1500 cfs. (size may be adjusted) to discharge to CLBSA via L-37. Remove 2 eastern structures proposed under Component YY
300 cfs (may be adjusted) pump station to back pump C-13 to NLBSA via C-42, NNR and US 27 west conveyance
C-13
WCA 2B
L-35A
North New River
L-37
US 27
1300 cfs (size may be adjusted) pump station to back pump C-13, C-14, NNR runoff and WCA 2B levee seepage to NLBSA via US 27 west conveyance
C-11
Alternative D13R Scenario 1 Component Map 2
LEGEND
Existing Canal
Improved Canal Capacity
Existing Structure
Proposed Pump
Proposed Structure
N
Not To Scale


This graphic is a conceptual tool utilized for project development only. This graphic is not self-executing or binding, and does not otherwise affect the interests of any person including any vested rights or existing uses of real property.
N
Not to scale
WCA-3B
Relocate MWD S-356 Pump & 2-900 cfs pumps/spreader swales to distribute flows from WCA-2 or Central Lakebelt Storage to NESRS
1300 cfs pump to Bird Drive flow through area (size based on NBLSA deliveries to NESRS) Maintain 800 cfs pump capacity for regional system deliveries for SDCS
Tamiami Trail
C-4
P
500 cfs at 4feet head structure delivering from NLBSA thru Bird Drive to NESRS buffer area. (Size may be adjusted).
Bird Drive Recharge Area
Bird Drive conveyance to provide SDCS deliveries via relocated L-31N and C-1W
Remove L-31N canal from new distribution pump south to C-1W
R
Reuse recharge Canal and 1000 cfs gravity control structure to pass deliveries fro SDCS and to provide flood protection east of Bird Drive basin.
L-31N
West Wellfield
Rock Mining area based on Lake Belt Plan and overflow structure
Relocated Protection L-31N Levee and seepage control
C-1
G-211
8.5 Sq. Mi. Area
LEGEND
Existing Canal
Proposed Structure
Existing Structure
Proposed Canal
Proposed Pump
Backfilled Canal
Proposed Levee with Seepage Control
Proposed Levee
Reuse plant
Component D13R
Scenario 1
Map 3